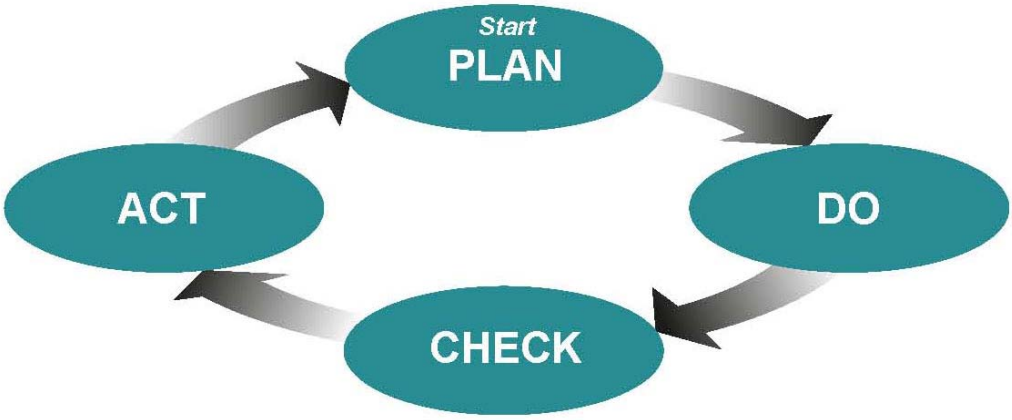
LBNL/PUB 3180

Environmental Management System Plan



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Disclaimer

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1.0
Executive Summary

DOE Order 450.1, *Environmental Protection Program*[1], has mandated the development of Environmental Management Systems (EMS) to implement sound environmental stewardship practices that:

- Protect the air, water, land, and other environmental resources potentially impacted by facility operations and
- Meet or exceed applicable environmental laws and regulations.

In addition, the DOE Order mandates that the EMS must be integrated with a facility's Integrated Safety Management System (ISMS) established pursuant to DOE P 450.4, *Safety Management System Policy*[2].

DOE Order 450.1 and DOE Order 430.2B, Department Energy, Renewable Energy and Transportation Management[3], incorporate the provisions of Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management[4], which requires more widespread use of EMS as the framework in which to manage and continually improve sustainable practices.

DOE Order 430.2B also incorporates the provisions of the Energy Policy Act of 2005[5], Energy Independence and Security Act of 2007[6], and the Secretary of Energy's Transformational Energy Action Management (TEAM) Initiative, and assures compliance is achieved through an approved Executable Plan.

These DOE Orders and associated policies establish goals and sustainable practices for reducing environmental impacts in the following areas:

- energy efficiency
- acquisition
- renewable energy
- toxic chemical reduction
- recycling
- sustainable buildings
- electronic stewardship
- fleet vehicles
- water conservation

While the Lawrence Berkeley National Laboratory (LBNL) had implemented components of an EMS, its historical emphasis had been on compliance with environmental laws and regulations. The challenge will be to incorporate activities into the existing EMS that will further improve environmental performance and will not diminish the strengths of the environmental compliance programs. Therefore, all activities to improve the EMS must be performance-based and be cost-effective – deliver real and tangible business value at a minimal cost. The purpose of this plan is to describe Berkeley Lab's approach for achieving a performance-based EMS.

The goals of the LBNL EMS approach will be three-fold:

1. Comply with applicable environmental and public health laws and regulations.
2. Prevent pollution and conserve natural resources.
3. Continually improve that Laboratory's environmental performance.

A continual cycle of planning, implementing, evaluating, and improving processes will be performed to achieve these EMS goals. Each year, environmental aspects will be identified and their impacts to the environment will be evaluated. Objectives and targets will be developed for each aspect that is determined to have a significant impact. Environmental Management Programs (EMPs) will be prepared to document actions necessary for reducing certain environmental impacts and for identifying responsible parties and associated target deadlines for each action. Annually, an internal assessment will be performed to evaluate the progress of the EMS, and LBNL senior management will review the results. In addition, at least once every 3 years a third-party audit will be performed to validate that the EMS is being implemented according to this plan.

The LBNL EMS will be integrated with the Laboratory's ISMS as described in LBNL's *Integrated Environment, Health and Safety Management Plan*[7]. To the extent that it is practical, ISMS processes will be used to support environmental performance improvement. Where it is not practical, new processes will be developed to support the LBNL EMS and these will be integrated with LBNL's ISMS. This approach will allow LBNL to develop an EMS that is cost-effective and to focus resources on those activities with the highest potential environmental benefits.

The LBNL EMS approach does not include certification to the International Organization for Standardization (ISO) 14001:2004(E), Environmental Management Systems~ Requirements with Guidance for Use[8]. ISO 14001 certification is not a regulatory requirement and does not provide a sufficient business value to the Berkeley Lab. Furthermore, ISO 14001 certification is not cost-effective, as it imposes extensive requirements for preparing detailed documentation and creating processes that have little environmental benefit at the Laboratory. Meeting all of the requirements of ISO 14001 would force a shift in resources away from activities that could be used to improve environmental performance toward performing those that have relatively little value. However, the LBNL EMS will reflect the elements and framework found in the ISO Standard. Section 3 of this EMS Plan describes how each one of the seventeen elements in the ISO Standard will be addressed.

2.0
Introduction

2.1 REQUIREMENTS

DOE Order 450.1, *Environmental Protection Program*, and DOE Order 430.2B, *Departmental Energy, Renewable Energy and Transportation* Management, established the EMS requirement for all of its facilities and, in addition, DOE Order 450.1 mandated that the EMS be integrated with the existing ISMS. Both Orders directs DOE contractors to implement an EMS as the primary management approach for addressing environmental aspects of energy and transportation functions; establishment of objectives and targets to ensure implementation and collection, analysis, and reporting of information to measure performance. It is not a stand-alone environmental program, but a framework within which existing and new organizational responsibilities, programs, and activities are linked. When properly implemented, the EMS will enable the Laboratory to clearly identify and establish goals, develop and implement plans to meet the goals, determine measureable progress towards the goals, and make changes to ensure continual improvement. The Overarching Policy and Directive as expressed in E.O. 13423 is:

> "It is the policy of the united States that Federal agencies conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient, and sustainable manner."

Neither DOE Order 450.1 or 430.2B nor the Executive Order requires an organization's EMS to meet a recognized standard, such as the International Organization for Standardization (ISO) 14001:2004(E), *Environmental Management Systems – Requirements with Guidance for Use*. However, the E.O. requires that the EMS reflect the elements and framework found in the ISO 14001 International Standard or equivalent.

2.2 PERFORMANCE-BASED APPROACH

Consistent with the Overarching Policy and Directive to conduct activities in both an environmental and fiscally sound manner, LBNL will develop and implement a performance-based EMS – a systematic approach to ensuring that environmental stewardship activities are well-managed and provide business value. The EMS will employ tailored approaches that would accomplish DOE objectives in a manner that is most appropriate to the particular conditions and circumstances at the LBNL site. Accordingly, the EMS will be based on the work, the environment in which the work is performed, and the hazards or impacts associated with the work at Berkeley Lab. The performance-based approach will apply the elements of ISO 14001 in a manner that provide real and tangible

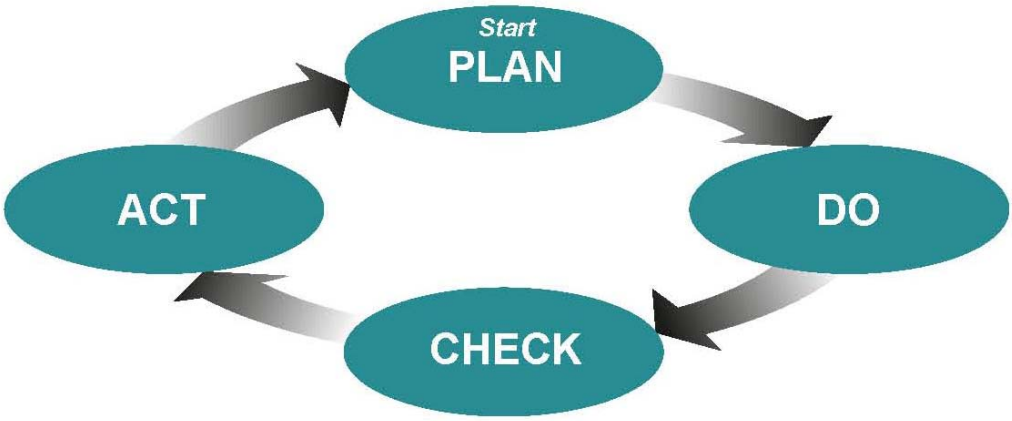
business value, rather than simply using an approach that follows all the elements of an ISO 14001-type of EMS, regardless of value. This approach will allow the Berkeley Lab to focus resources on those activities that have a more valuable and stronger environmental benefit and to maintain the current strengths of the environmental compliance programs.

2.3 GOALS

The goals of the LBNL EMS will be three-fold:

1. Compliance with all applicable environmental protection and public health requirements.
2. Pollution prevention and conservation of natural resources.
3. Continual improvement of the Laboratory's environmental performance in a cost-effective manner.

A continual cycle of planning, implementing, evaluating, and improving processes and actions will be undertaken to achieve these EMS goals (see the diagram below).



2.4 INTEGRATION OF EMS WITH ISMS

The EMS will be integrated with the LBNL ISMS. To the extent that it is practical, ISMS processes will be used to support environmental performance improvement and compliance management. Where it is not practical, new processes will be developed to support LBNL's EMS and these will also be integrated with the LBNL ISMS.

Both the EMS and ISMS strive for continual improvement, through a plan-do-check-act cycle. This cycle calls for defining the scope and purpose of the system, followed by a planning **(plan)** step to develop programs and procedures that must then be implemented **(do)**. Once implemented, programs must be assessed **(check)** and any problems corrected **(act)** to improve the effectiveness of the management system and to achieve improved environment, safety, and health performance.

The major elements of an EMS consist of the following: an environmental policy statement (part of LBNL's Environment, Health and Safety policy statement); planning; implementation and operation; checking and corrective action; and management review. The table below shows the parallels between EMS major elements and ISMS core functions:

	Environmental Management System	Integrated Safety Management System
	Policy	
PLAN	Planning	Analyze Hazards
DO	Implementation and Operation	Develop & Implement Hazard Controls
CHECK	Checking and Corrective Action	Provide Feedback and Continuous Improvement
ACT	Management Review	Annual ISMS Review

2.5 GAP AND STRATEGIC ANALYSIS

Prior to the development of the LBNL EMS approach, a gap and strategic analysis was performed in fiscal year (FY) 02. Existing programs and systems were reviewed that meet or correspond to an ISO 14001 EMS-required element. Relevant LBNL documents were reviewed, and relevant program managers were interviewed. Gaps were identified between the existing programs and systems and each EMS element. Potential actions required to address each gap were identified, and the significance of each element for assuring environmental compliance and improving environmental performance was evaluated. Then, an implementation strategy was developed to maximize the use of existing systems.

It was determined that an effective environmental management system (EMS) could be constructed with the more valuable components of ISO 14001, using existing elements of the LBNL ISMS and focusing on environmental performance improvement and compliance management. LBNL's EMS would not pursue activities that have little value for improving environmental performance, such as much of the detailed documentation involved in connecting, summarizing, and describing existing LBNL activities that would be required for strict adherence to the ISO EMS standard. While all elements of the ISO 14001 EMS standard require documentation of procedures that are helpful in tightening up and controlling associated activities, some are less critical for achieving focused improvement in environmental performance. Thus, a performance-based approach was developed that would allow the lab to focus its limited resources on improvement activities with more valuable and stronger environmental benefits.

LBNL's EMS approach would also leverage on certain areas in which there are already systems and approaches in place. Since the ISMS program is an effective and documented system, it will serve as an excellent platform for building an EMS. LBNL will be able to focus its resources on building the key EMS components that provide the most value. This approach does not preclude adding the other elements of the ISO 14001 standard over time, if it is determined that there is sufficient value to adding them. In the meantime, LBNL would have an effective EMS supported by the well-established ISM system.

3.0
Program Elements

Consistent with ISO 14001, implementation of the LBNL performance-based EMS Program will focus on the following seventeen elements:

1. Environmental policy
2. Environmental aspects
3. Legal and other requirements
4. Objectives and targets
5. Environmental Management Programs (EMPs)
6. Structure and responsibility
7. Training, awareness and competence
8. Communication
9. Documentation
10. Document control
11. Operational control
12. Emergency preparedness and response:
13. Monitoring and measurement:
14. Nonconformance and corrective and preventive action:
15. Records:
16. Audits and appraisals
17. Management review

3.1 ENVIRONMENTAL POLICY

The environmental policy is contained within the EH&S policy that is found in the *Integrated Environment, Health and Safety Management Plan*: http://www.lbl.gov/ehs/ism/ism_06.pdf.

The following policy is documented in the September 2007 Plan:

> "It is the policy of Lawrence Berkeley National Laboratory to perform all work safely with full regard to the well being of workers, guests, the public, and the environment.

Keys to implementing this policy are the following core safety values:

- The institution demonstrates a strong commitment to safety by integrating safety into all facets of our work.
- Managers and supervisors are actively involved and demonstrate leadership in performing work safely.

- Individuals take ownership for safety and continuously strive to improve.
- Individuals demonstrate an awareness and concern for the safety of others.
- The Laboratory is committed to doing this while meeting the requirements of Clause I.86 of Contract 31 and implementing the policy provided in DOE Policy 450.4 ("Safety Management System Policy") and the specifications and guidance for an Environmental Management System [DOE Order 450.1]."

3.2 ENVIRONMENTAL ASPECTS

The Core Team will identify environmental aspects – activities or services that may produce a change to the environment, whether adverse or beneficial, wholly or partially, immediately or gradually, resulting from LBNL operations. Consideration will be given to activities involving waste generation and recycling, emissions and discharges to the environment, materials/resources use, and land/building development and use.

A list of environmental aspects will be developed and maintained which will aid the Core Team in selecting significant issues to focus on each year. The Team will focus its attention on those significant aspects that will provide the most potential value toward improving LBNL's environmental performance and compliance effectiveness. Additional environmental aspects can be addressed in subsequent years using the routine EMS goal-setting approach.

The Core Team meetings will include detailed discussion of LBNL's routine activities and services, such as: research, engineering, maintenance and operations, administration, transportation, construction, emergency response, or catastrophic events. An extensive list of environmental aspects/impacts will be maintained. Executive and DOE Orders, and federal, state and local agency laws and regulations will be considered in creating LBNL's environmental aspect/impact inventory list. A worksheet of these aspects/impacts will be created and provided to each Core Team member for further evaluation. The worksheet will be revised based on comments from team members and others.

From this inventory worksheet, the Core Team will determine which aspects are most significant. Significant aspects are evaluated relative to the framework of environmental impacts and objectives. The Core Team will consider the life cycle of LBNL's activities or services and their potential impacts on the biosphere. Those aspects that are regulated by DOE or other regulatory agencies may be given greater emphasis. In addition, the Core Team will use its discretion in determining whether an aspect is significant, using the following factors to shape its decisions:

- Severity of impact
- Impact duration
- Probability of impact occurrence
- Impact scale
- Cost of addressing impact
- Impact effect on public image

- Impact effect on other activities
- Potential legal exposure, and
- Potential for improvement.

Each impact will be given a numeric rating based on a 3-tiered scoring system: high (3), medium (2), and low (1). Average scores and overall ratings for each impact will be determined and used to provide a starting point for the significance determination. Before this list is finalized, further evaluations of these identified aspects/impacts by the Core Team and other related employees will be performed. The Core Team may determine that additional information is needed to evaluate a particular product or activity; the team leader will assign the responsibility for collecting that information to an appropriate member. Selection of these significant aspects will not be based on the overall ratings, but will be based on subsequent evaluations and Core Team discussions.

The process of identifying environmental aspects and impacts and determining their significance is further described in EH&S Procedure 272, Identification of Significant Environmental Aspects and Impacts.

3.3 LEGAL AND OTHER REQUIREMENTS

LBNL's Contract (No. DE-AC02-05CH11231 through MO49)[9] between DOE and the Regents of the University of California contains the official language and provisions that provide the legal basis for all Laboratory activities. A list of all applicable laws and regulations are found in Appendix I of the Contract: http://labs.ucop.edu/internet/comix/contract/lbnl_apndx_i.html. Appendix I includes the set of environment, safety and health standards that are applicable to LBNL activities. These standards are tailored to the specific hazards and activities at LBNL and are called the Work Smart Standard (WSS) set for LBNL, which is one of the items listed in Appendix I of the Contract.

The LBNL WSS set in Appendix I is separated into two sections – Necessary Standards and Sufficient Standards. The LBNL Necessary Standards are those which apply to the site by federal laws and regulations (state laws and regulations and local ordinances are also included if applicable federal laws contain a waiver of federal sovereign immunity). The LBNL Sufficient Standards are industrial or consensus standards, state laws and regulations and local ordinances that are applicable to the activities and hazards at LBNL, and LBNL internal policies.

The process of identifying and maintaining the set of environment, safety and health standards that are applicable to LBNL is defined by the WSS Change Management Process (CMP). The WSS CMP is a critical component of the LBNL ISMS that provides assurance that employees, the public, and the environment are adequately protected. The CMP also describes how LBNL and the DOE Berkeley Site Office (BSO) integrate their WSS change management efforts.

Additional information regarding LBNL legal requirements and the WSS process can be found in Section 10, "Standards and Requirements", of the *Integrated Environment, Health and Safety Management Plan:* http://www.lbl.gov/ehs/ism/ism_06.pdf.

3.4 OBJECTS AND TARGETS

Objectives and targets will be established based on the analysis of significant aspects and impacts. The EMS Core Team will review LBNL's long-term goals and strategic plans to determine if the objectives are consistent with these goals. Progress will be measured toward the achievement of objectives and targets. The metrics will be tracked, recorded and reviewed in appraisals, audits and managements reviews of the EMS program. The metrics serve as the basis for action and for continuous improvement.

The EMS Core Team may also consider the views of interested parties. This may require input from other groups such as the DOE or for other LBNL organizations such as the Public Affairs office to determine whether additional objectives are needed to address the views of interested parties.

All significant aspects will be reviewed by the EMS Core Team and objectives and targets will be established for each significant aspect. The Core Team will review all environment, health and safety goals to determine if additional objectives need to be established. Objectives and targets should be consistent with the Laboratory's policies and plans. Objectives are to be further categorized into one or more of the following areas:

- "C" – Control/Maintain – continued ongoing control and compliance with regulations and/or policies, guidelines and procedures.
- "I" – Improve – stated ongoing improvement actions already established or readily definable.
- "S" – Study/Investigate – requires investigation of potential alternatives for improvement including technology and process changes.

EMS Core Team reviews objectives for technological, financial, operational and business issues. They evaluate various options for meeting objectives taking into consideration LBNL's resource and mission constraints and consider what goals and time periods are realistic to achieve. The Core Team establishes targets for each objective taking into consideration the classification of the objective (C, I, or S) and technological, financial, operational and business parameters.

Additional information regarding objectives and targets can be found in EH&S Procedure 273, Environmental Management Programs.

3.5 ENVIRONMENTAL MANAGEMENT PROGRAMS (EMPs)

The Core Team will develop an EMP for each selected significant aspect, appoint a leader, and establish objectives and targets for each EMP. The EMP leader may organize a task force to develop and implement this program. Based on the objectives and targets, the EMPs will establish goals and strategies, actions to achieve goals, identify resource needs, develop procedures, metrics, or techniques, and set up schedules. Each EMP may have multiple tasks or actions, and each task may employ specified procedures or techniques that must be developed, implemented, or used in

order to achieve the objective and target. A program schedule may be prepared to help the EMP leader track the status of various EMP-related actions.

Periodically during the year, each EMP leader will present the progress results of the task force to the Core Team. The Core Team will monitor the progress of each EMP, make suggestions and comments, identify potential problems, and provide additional support when necessary. The Core Team meeting minutes will document EMP activities.

Additional information regarding EMPs can be found in EH&S Procedure 273, Environmental Management Programs.

3.6 STRUCTURE AND RESPONSIBILITY

An EMS Core Team will be largely responsible for implementing the program. The Core Team will initially consist of key representatives from the EH&S, Facilities, and Procurement organizations that are most knowledgeable of environmental management concerns, and team leadership will be provided by a representative of the EH&S organization. As issues arise, other organizations can be consulted or brought into the team; similarly, input from other groups (e.g., LBNL Safety Review Committee or Division Safety Coordinators) can be solicited through designated Core Team representatives. The composition of the Core Team will likely change with time as the program evolves. A representative from the DOE Berkeley Site Office will also be invited to the meetings in order to maintain an operational awareness of the EMS Core Team activities.

Each year, the Laboratory's activities will be reviewed by the Core Team and categorized into environmental aspects. Then, the associated impacts of each environmental aspect will be reviewed and their significance will be evaluated. A subset of environmental aspects with significant impacts will be selected for improvement. Objectives and targets will be developed to address each significant impact. EMPs will be prepared by members of the Core Team to document actions necessary for reducing certain environmental impacts, responsibilities for each action, and associated target deadlines. Periodically, the Core Team will meet to monitor performance in achieving objectives and targets. Annually, the Core Team will also re-assess all environmental aspects/impacts and evaluate LBNL’s performance. This assessment will provide useful information for setting new objectives and targets in subsequent years, updating the EMS plan, or identifying problems, which can be corrected to improve productivity and environmental performance.

The EMS Core Team Leader will convene meetings; lead the team through design, implementation, and ongoing use of the EMS; and serve as the main liaison between the EMS team and LBNL senior management. Records (e.g., meeting minutes, presentations, worksheets, EMPs) will be maintained by the Leader and will be retained for an indefinite period, or as required under records-retention procedures. The EMS Core Team is further described in the EH&S Procedure 271, Establishing the EMS Implementation Team.

Annually, an internal assessment will be performed by the LBNL Office of Contract Assurance (OCA). The review will determine if the EMS is implemented according to this plan and will

evaluate the progress of the EMS. In addition, at least once every 3 years a third-party audit will be performed to validate that the EMS is being implemented according to this plan. If there are significant issues, LBNL senior management may review the results and offer suggestions on how to address the issues.

3.7 TRAINING, AWARENESS AND COMPETENCE

In LBNL's EMS approach, training will be targeted and graded, commensurate with the EMS activity. Four types of training are planned as follows:

1. General EMS awareness
2. Comprehensive EMS awareness
3. EMS implementation
4. EMS auditor

The general EMS awareness training will include summary information about EMSs and LBNL's EMS approach. The target audience includes key LBNL senior managers and key LBNL staff that are important for the implementation of an EMP.

The Core Team members will need to have the comprehensive level of EMS awareness to ensure their competence in developing and implementing the EMS. This will be accomplished by single or multiple training sessions conducted by personnel experienced with the implementation of an EMS. These may be arranged in conjunction with the Core Team meetings or conducted as separate, dedicated training sessions. Core team members are also encouraged to participate in the EMS implementation or auditing training courses offered by accredited consultants. Core team members, key support staff, or EMP task force members may also participate in other related training classes or conferences on pollution prevention, waste minimization, sustainable development, green building, or green purchasing offered by the DOE, U.S. Environmental Protection Agency, or other organizations.

The Core Team Leader will be required to take a comprehensive EMS implementation course. These provide substantial details about EMS concepts and elements, usually requiring 1 to 3 days of coursework.

LBNL staff that perform internal reviews of the EMS program will complete the comprehensive EMS implementation course and additional coursework that provides substantial information about auditing a systems-based program. The additional coursework usually requires an additional day or two of instruction.

Additional information regarding EMS training can be found in EH&S Procedure 274, Training.

3.8 COMMUNICATION

EMS communication is performed by publishing an annual Site Environmental Report, posting information on websites, preparing articles for Berkeley Lab publications and by the use of an employee EH&S concerns website.

Each year, LBNL prepares an integrated report on its environmental programs to satisfy the requirements of DOE Order 231.1A, *Environment, Safety, and Health Reporting*[10]. The *Site Environmental Report* (SER) summarizes Berkeley Lab's environmental management performance, presents environmental monitoring results, and describes significant environmental programs for the previous calendar year. The Report is distributed by releasing it at an EH&S Environmental Services Group (ESG) website that has been established for accessing environmental documents, which is located at http://www.lbl.gov/ehs/esg/tableforreports/tableforreports.htm. CD and printed copies of the SER are also available on request. A *Today at Berkeley Lab* (TABL) announcement will be made whenever a new SER is posted on the website.

The ESG website contains a link to important EMS documents including, the EMS Plan, the current set of EMPs, EMS fact sheets and internal assessment and third-party audit reports. These web pages are accessible to LBNL staff, DOE, other regulatory agency staff, and community members.

Whenever appropriate, EMS topics will also be publicized via articles in TABL and the *Berkeley View*. Topics may be determined by EMS Core Team members based on EMP activities and challenges. Environmentally-related articles may also be submitted by the general Laboratory population.

LBNL employees or external interested parties may communicate their EH&S concerns using an EH&S website at: http://www.lbl.gov/ehs/refs/safety_concern.shtml. At this site, they will find a special electronic address that has been set up for receiving EMS-related concerns: ems@lbl.gov.

3.9 DOCUMENTATION

The EMS includes the following documentation:

- An EMS Plan that describes the scope and elements of the environmental management system and how it relates to the Laboratory's ISMS and ISMS processes.
- Five implementing procedures for the EMS Plan that provide additional information about the following activities:

    1. Establishing an implementation team
    2. Identification of significant environmental aspects and impacts
    3. Environmental management programs
    4. Training
    5. Assessments and audits.

- EMPs for aspects with significant environmental impacts, including objectives and targets for addressing each impact.
- An Environmental Aspect and Impact Worksheet that provides a comprehensive list of environmental aspects, shows how they were evaluated and which ones were considered significant.
- Audit and assessment reports from internal and external organizations.
- Other records including meeting minutes and attendance sheets, presentation materials and fact sheets.

Much of this information is available at the Laboratory's EMS website at: http://www.lbl.gov/ehs/esg/emsplan/emsplan.htm.

3.10 DOCUMENT CONTROL

EMS documents that are formally reviewed and approved for adequacy prior to issue are this EMS Plan and its 5 implementing procedures.

The EMS Plan is prepared by the EMS Core Team leader, reviewed by the Core Team members and approved by the Division Director for EH&S. The current version of the Plan is posted on a website at: http://www.lbl.gov/ehs/esg/emsplan/emsplan.htm.

The Plan's implementing procedures are also prepared by the Core Team leader and approved by the Director for EH&S.

These documents are reviewed and updated as necessary, based on the judgment of the EMS Core Team leader.

3.11 OPERATIONAL CONTROL

Operational controls may be evaluated for those operations that are associated with the significant environmental aspects in order to determine if activities are conducted in a way that will reduce the adverse impacts associated with them. Documented procedures may be considered in situations where there are difficulties in achieving or maintaining environmental objectives and targets.

3.12 EMERGENCY PREPAREDNESS AND RESPONSE

There are 3 principle documents that establish emergency preparedness and response policies and procedures at LBNL. They are:

1. *Master Emergency Program Plan* (Pub-533)[11]
2. *Hazardous Materials Business Plan* (Pub-836)[12]
3. *Spill Prevention Control and Countermeasures Plan*[13]

The *Master Emergency Program Plan* establishes policies, procedures and an organizational structure for responding to and recovering from a major disaster at LBNL. This document was prepared to meet DOE's contractor requirements in their DOE Order 151.1B, *Comprehensive Emergency Management System*[14]. Additional information can be found by referring to the Plan at: http://www.lbl.gov/ehs/ep/docs_2/MEP.pdf.

According to California regulation, facilities handling specific chemicals in excess of certain amounts must annually prepare a *Hazardous Materials Business Plan* and submit it to local administering agencies. As a federal facility, LBNL is exempt from this regulation but voluntarily prepares this plan and submits it to the City of Berkeley. The plan contains information about the amounts and locations chemicals are used as well as information about emergency plans and procedures. The current *Hazardous Materials Business Plan* is available from the EH&S website at: http://www.lbl.gov/ehs/index.shtml by selecting the document at "EHS Quick Links".

The *Spill Prevention Control and Countermeasures Plan* contains policies and procedures for the safe storage and use of oil and for responding to oil spills. It was prepared to meet the requirements of Title 40, Part 112 of the Code of Federal Regulations and the California Health and Safety Code, Chapter 667. This plan is available on the web at: http://www.lbl.gov/ehs/esg/_tableforreports/assets/SPCC%2010-2007.pdf.

3.13 MONITORING AND MEASUREMENT

LBNL has developed and implemented an environmental monitoring program to ensure that its activities are conducted in a manner that will protect and maintain environmental quality. The results of this program demonstrate compliance with requirements imposed by federal, state, and local agencies; confirm adherence to DOE environmental protection policies; and supports environmental management decisions. The environmental monitoring program is implemented by the EH&S ESG and consists of four major activities:

1. Effluent Monitoring
2. Environmental Surveillance
3. Meteorological Monitoring
4. Pre-operational Monitoring

Further information can be found in the *Environmental Monitoring Plan*[15] at: http://www.lbl.gov/ehs/esg/tableforreports/assets/2006emp.pdf.

Environmental management activities are also monitored as a part of LBNL's ES&H self-assessment program. The self-assessment program is a formal, internal process used to evaluate ES&H programs, policies, and processes. The process is designed to ensure that Laboratory work is conducted safely and with minimal adverse effects to workers (employees, participating guests, and subcontractors), the public, and the environment. The program is also the mechanism used to institute continuous improvements to the Laboratory's ES&H programs. It uses performance

objectives and criteria based on the core ISM functions and guiding principles to evaluate the ES&H performance, including environmental management performance.

Additional information about LBNL's self-assessment program can be found in the *EH&S Self-Assessment Program* (Pub-5344)[16] at:

http://www.lbl.gov/DIR/OIA/assets/docs/OCA/OCA_ESH/PUB5344.pdf .

3.14 NONCONFORMANCE, CORRECTIVE AND PREVENTIVE ACTION

Environmental compliance inspections and reviews are conducted by a number of external organizations including:

- University of California Office of the President
- U.S. Department of Energy
- U.S. Environmental Protection Agency, Region 9
- California Department of Toxic Substances Control
- California Department of Health Services
- California Air Resources Board
- California Water Resources Control Board
- Regional Water Quality Control Board
- Central Contra Costa Sanitary District
- East Bay Municipal Utility District
- Bay Area Air Quality Management District
- City of Berkeley

Internal environmental assessments may also be conducted by Laboratory organizations under an ongoing self-assessment program. In addition, special internal assessments may be conducted by LBNL's OCA.

Issues, including findings and observations, from inspections, reviews and assessments are documented in reports. In response to findings, laboratory management develops action plans to correct the identified operational and management deficiencies as necessary. The plans include schedules for completing the corrective actions and can provide for regular reporting, as required, to the agency or office that conducted the appraisal until all deficiencies are closed out.

In order to facilitate the corrective action process, the Laboratory has implemented a web-based system to track actions called the Corrective Action Tracking System (CATS). It serves as a means for LBNL management to identify, track and review resolution of institutional deficiencies. Significant EMS deficiencies, such as audit findings, are required to be entered into CATS. Less significant deficiencies, such as observations and best management practices, are entered into CATS at the discretion of the Core Team Leader.

Further information regarding the Laboratory's policies and procedures regarding compliance reviews and the corrective action process can be found in section 11, “Evaluating and Resolving

Non-compliances", of the *Integrated Environment, Health and Safety Management Plan*: http://www.lbl.gov/ehs/ism/ism_06.pdf.

3.15 RECORDS

Records management is a line-management function at Berkeley Lab, and the Laboratory Archives and Records Office assists line management in meeting its records management responsibilities. The Laboratory's policies and procedures for records management are described in the *Rules and Procedures Manual*[17], section 1.17, "Archives and Records Management": http://www.lbl.gov/Workplace/RPM/R1.17.html.

3.16 AUDITS AND APPRAISALS

Internal Assessment

Annually, an internal assessment will be performed of the EMS program and activities by LBNL's OCA. The internal assessors should be knowledgeable about EMS requirements and the LBNL performance-based EMS. The review will determine if the EMS activities conform to the requirements of the LBNL EMS program plan and if it has been properly implemented and maintained, suggesting corrective action and opportunities for improvement Additionally, the assessors may review the performance of the EMPs. The results of the internal review will be discussed with the EMS Core Team, and the Team will determine what actions are necessary to address the assessment findings. In addition, the results of the internal assessment may also be presented to LBNL senior management.

Validation Audit

On a three-year cycle, a third-party validation of LBNL's EMS program will be performed. The auditor(s) will be tasked with determining if the EMS activities conform to the requirements of the LBNL EMS program policies and if it has been properly implemented and maintained. The audit will be performed by a subject matter expert or team of experts that are knowledgeable of EMS requirements and have experience with the implementation of EMSs in research facilities. A representative from DOE will be invited to participate as an observer on the team. It is anticipated that the length of the validation will be approximately 5 days, including both desk and onsite reviews. The findings will be presented to the EMS Core Team, and the Team will determine the appropriate set of corrective actions. In addition, the results of the validation audit may be presented to LBNL senior management. A special management review may be convened if the validation audit determines that there are significant weaknesses in the program requiring their attention. All significant findings will be tracked using the Laboratory's CATS.

The internal assessment and validation audit processes are further described in EH&S Procedure 275, EMS Assessments and Audits.

3.17 MANAGEMENT REVIEW

Annually, the EMS activities will be discussed with LBNL senior management. As a minimum, the discussion will be with the EH&S Director and may include one or more of the following topics:

- Significant environmental impacts
- EMP progress
- Candidate projects for addressing the significant environmental impacts
- Results of EMS internal assessments and external audits
- Recommendations for continual improvement.

Based on this review, LBNL's management may determine the need to make changes to the EMS program. Factors such as improved assessment methodologies, or major changes to the facility's mission, products, and processes are considered in determining the need to make changes to the program. Laboratory management should respond to recommendations for continual improvement.

References

1. U.S. Department of Energy, *Environmental Protection Program*, DOE Order 450.1 (January 2005, as amended).
2. U.S. Department of Energy, Safety Management System Policy, DOE P 450.4 (October 15, 1996).
3. DOE O 430.2B, *Departmental Energy, Renewable Energy and Transportation Management,* Attachment 1, *Contractor Requirements Document* (CRD), (February 27, 2008).
4. U. S. Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (January 26, 2007).
5. Public Law 109-58, Energy Policy Act of 2005 (August 8, 2005).
6. Public Law 110-140, Energy Independence and Security Act of 2007 (December 19, 2007).
7. Ernest Orlando Lawrence Berkeley National Laboratory, *Integrated Environment, Health and Safety Management Plan* (September 2007).
8. International Organization for Standardization (ISO) 14001:2004(E), *Environmental Management Systems – Requirements with Guidance for Use.*
9. U.S. Department of Energy, Contract Between the United States of America and the Regents of the University of California, No. DE-AC02-05CH11231 through M049.
10. U.S. Department of Energy, *Environment, Safety, and Health Reporting*, DOE Order 231.1A (1995, as amended).
11. Ernest Orlando Lawrence Berkeley National Laboratory, *Master Emergency Program Plan* (December 1, 2005).
12. Ernest Orlando Lawrence Berkeley National Laboratory, *Hazardous Materials Business Plan* (March 2007).
13. Ernest Orlando Lawrence Berkeley National Laboratory, *Spill Prevention Control and Countermeasures Plan* (October 2007).
14. U.S. Department of Energy, *Comprehensive Emergency Management System*, DOE Order 151.1B (October 29, 2003).

15. Ernest Orlando Lawrence Berkeley National Laboratory, *Environmental Monitoring Plan* (February 2006).

16. Ernest Orlando Lawrence Berkeley National Laboratory, *Environment, Safety, and Health Self-Assessment Program* (September 2007).

17. Ernest Orlando Lawrence Berkeley National Laboratory, *Rules and Procedures Manual* (current version).

5.0
Acronyms

BSO	Berkeley Site Office of the Department of Energy
C	Control/Maintain EMP
CATS	Corrective Action Tracking System
CMB	Change Management Board
DOE	Department of Energy
EH&S	Environment, Health & Safety
EMP	Environmental Management Program
ESG	Environmental Services Group
EO	Executive Order
FY	fiscal year
I	Improve EMP
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
LBNL	Lawrence Berkeley National Laboratory
OCA	Office of Contract Assurance
S	Study/Investigate EMP
SER	Site Environmental Report
TABL	Today at Berkeley Lab
WSS	Work Smart Standard